

### REMARKS

The Applicants thanks the Examiner for comments made in the Office Action. Amendments to the claims overcome the objections and rejections made under Section 112. No new matter has been added by any of the amendments.

CFK and GFK are known terms of art used to identify a carbon fiber reinforced plastics (CFK) and a glass fiber reinforced plastic (GFK), respectively. They are used in the form of CFK and GFK in the literature and in patent applications in both the specification and the claims. A person having ordinary skill in the art will be familiar with the terms, as used in the specification and the claims. The term "carbon fiber reinforced plastics" is substituted for CFK, but the Applicant hereby disclaims any definition for carbon fiber reinforced plastics inconsistent with or broader than the known use of CFK. The term "glass fiber reinforced plastic" is substituted in the claims for GFK, but the Applicant hereby disclaims any definition for glass fiber reinforced plastics inconsistent with or broader than the known use of GFK.

Panelling is an acceptable alternative spelling for paneling in the American Heritage Dictionary of the English Language, Fourth Edition. (See attached.) The Applicant uses the term "panelling" within the known context to a person of ordinary skill in the art (which is not limited to the dictionary definition). Applicant does not believe that a replacement specification and amendments to the claims are necessary to change the spelling of panelling to paneling, as a person of ordinary skill in the art will certainly understand the meaning of panelling, as presented in the specification and the claims, based on the accepted alternative spelling in the art and provided in dictionaries.

### Obviousness

The Office Action combines Humphries and Fischer et al., but fails to establish *prima facie* obviousness over independent claim 23. In order to establish *prima facie* obviousness, a single reference or a combination of references must teach or suggest all of the limitations of the claim. Neither Humphries no Fischer et al., taken alone or in combination, teach or suggest

a burn-through-proof foil arranged such that the burn-through-proof foil conforms to the outer surface of the GFK layer or the CFK layer.

The Applicant believes that the Office Action incorrectly identifies the CFK layer or the GFK layer as the burn-through-proof foil. An example of a burn-through-proof foil **11** is identified in the drawings and the specification, which is in addition to a GFK layer or a CFK layer.

The Office Action admits that Humphries fails to teach or suggest a CFK layer or a GFK layer. Humphries fails to identify a burn-through-proof foil arranged on a CFK layer or a GFK layer.

The Office Action asserts that Fischer et al. teaches or suggest a CFK layer or a GFK layer and an aluminum layer as a burn-through-proof layer, but the Applicant traverses this assertion. Fischer et al. discloses only Figure 1, below. In Figure 1, a core **4** has layers of fibrous material **3** attached to the surface of the core **4**. A thin aluminum layer **2** is taught as a preferred layer having a high melting point and a high combustion temperature. A high combustion temperature is defined as between 700 and 1000 degrees centigrade. A high melting temperature is defined as less than the combustion temperature. Fischer et al. teaches that aluminum foil would normally not withstand the temperature ceiling in a fire condition and would melt. However, as taught in column 3, lines 45-55, Fischer et al. teaches that the melting and wearing of the fabric ply **1** as the outermost surface ply reduces the flame temperature to such an extent that the aluminum foil does not melt. Thus, neither the fabric ply **1** nor the aluminum foil **2** need to be a burn-through-proof foil. Indeed, Fischer et al. teaches that use of a thin aluminum foil **2** of only 0.02 mm to 0.05 mm in thickness may be used so that its weight "is not detrimental to the weight of the floor panel" in column 3, lines 22-26. Weight is one of the most critical aspects in aviation; therefore, a person of ordinary skill in the art familiar with the teachings of Fischer et al. would adopt such an aluminum foil in conjunction with an ablative fabric ply **1** that provides an adequate barrier to smoke without introducing detrimental weight to the floor panel. At column 1, lines 26-29, Fischer et al. teaches that carbon fiber reinforced sandwich panels are "...mainly intended for use in aeroplanes in order to keep as low as possible the operating deadweight, and as a consequence thereof, the fuel costs." Fuel

costs have never been more of a concern than in the past several years. Therefore, a person of ordinary skill in the art will do whatever is recommended to reduce weight.

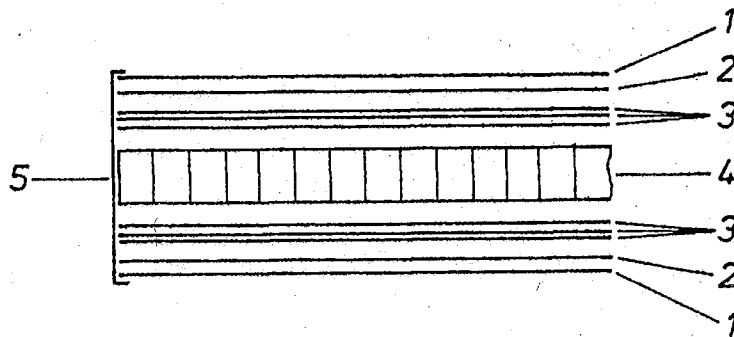


FIG. 1 (Fischer et al.)

According to Fischer et al., the combination of a thin aluminum layer and a fabric ply 1 impregnated with phenol resins and epoxy resins on the side of the aluminum layer opposite of the passenger cabin, provides both the fire protection needed, provides a low weight, and is economically produced using a "one-shot bonding" process, because the aluminum layer separates the phenol impregnated fabric ply 1 from the epoxy impregnated layers 3. This is necessary. Otherwise, the phenol impregnated fabric ply 1 would produce water that would destroy the epoxy resin during hardening of the structural plys 3. See the bottom of column 3, line 60 to column 4, line 2.

Furthermore, in the background, Fischer et al. distinguishes the prior art honeycomb sandwich panels for floors that use fibre-reinforced plastics panels, because use of epoxy resins are known to produce unacceptable levels of toxic fumes for use in aviation applications (column 1, lines 29-37) and phenol-based resins are unsuitable for use in adhering structural layers 3 to the honeycomb core 4 (column 1, lines 38-44). For this reason, the teachings of Fischer et al. cannot merely be mixed and matched with the teachings of the prior art. Indeed, the disclosure of Fischer et al. could not be clearer that honeycomb core panels of the prior art produce 2 to 4 times as much smoke as the panels produced in the example of Fischer et al. with comparable combustibility (column 1, lines 44-47).

However, Fischer et al. does not teach or suggest a honeycomb core sandwich panel that includes a burn-through-proof layer of any kind. Indeed, both the impregnated fabric, which melts and burns away over time, and the thin aluminum layer, recommended for its weight savings, high melting point and impermeability to water from the curing phenolic resins of the impregnated fabric, eventually melt and fail.

**Thus, the only example enabled in Fischer et al. and the example that any person of ordinary skill in the art would follow based on the teachings of Fischer fails teach or suggest “a burn-through-proof foil,” as recited in claim 23.**

Since neither Humphries nor Fischer et al. teach or suggest “...a burn-through-proof foil ... conforms to an outer surface of the carbon fiber reinforced plastics layer or the glass fiber reinforced plastics layer” that is “positioned on each face of the honeycomb body,” as recited in claim 23, either alone or in combination, the cited references fail to establish *prima facie* obviousness over claim 23.

**Furthermore, the teachings of Fischer et al. clearly teach away from a combination with Humphries,** because the honeycomb core sandwich of Humphries provides no fire resistance, whatsoever, and would be expected to increase smoke in the cabin. Although the type of adhesive used to bond the vinyl damping sheets **80** to the honeycomb cores **82** or the face sheets **84** to the honeycomb cores **82** is not expressly provided in Humphries, it must be assumed that Humphries used methods known in the art, and Fischer et al. clearly teaches away from such prior art honeycomb core sandwich structures as not meeting the smoke and fire preventative needs of the aviation industry. For this reason, no person of ordinary skill in the art would combine the teachings of Humphries and Fischer et al., which teaches away from prior art like Humphries.

Claims 24-30 and 33-39 depend from claim 23 incorporating all of the limitations of claim 23 and additional limitation; therefore, neither Humphries nor Fischer et al. establish *prima facie* obviousness over these dependent claims.

Claim 40, as amended, includes limitations to carbon fiber reinforced plastics (CFK) layers only, without metal layers interposed. Thus, Fischer et al. expressly teaches away from the limitations of claim 40, and no person of ordinary skill in the art would combine the teachings of Fischer et al. and Humphries. Claims 41 and 42 depend from claim 40

incorporating all of the limitations of claim 40 and additional limitations; therefore, claims 40-42, as currently amended, are now in condition for allowance.

The drawings of Figure 5 and Figure 9, and the specification support the amendments to claims 40-42. No new matter is added.

Now referring to Heitkamp, Heitkamp specifically teaches away from other multilayered honeycomb core sandwich structures of the prior art that fail to be burn-through-proof. See page 2 of Heitkamp. However, Heitkamp teaches the necessity of using a septum layer of inorganic fiber membrane and/or a vermiculite film sandwiched between phenolic prepreg; therefore, Heitkamp teaches away from combination with any of the other references and teaches away from the limitations of the pending claims. The reference teaches that the prior art is incapable of achieving the burn-through times of up to 15 minutes as achieved using the specific examples provided by Heitkamp. For this reason, no person of ordinary skill in the art would combine Heitkamp with any of the other references. An even if Heitkamp were combined, Heitkamp fails to teach or suggest any of the limitations of claims 23 and 40 omitted by Fischer et al. and Humphries. For these reasons, all of the pending claims are nonobvious over Heitkamp alone or in combination with other references cited in the Office Action.

Now referring to the Sigrafil website, nothing on the Sigrafil website teaches or suggests any of the limitations of claims 23 and 40 omitted by Fischer et al. and Humphries; therefore, all of the pending claims are nonobvious over Sigrafil, either alone or in combination with the other references cited.

Now referring to the M.C. Brady reference, nothing in the M.C. Brady reference teaches or suggests any of the limitations of claims 23 and 40 omitted by Fischer et al. and Humphries; therefore, all of the pending claims are nonobvious over M.C. Brady, taken alone or in combination with other references.

### **Double Patenting**

The Applicant traverses the non-statutory double patenting rejection, because the Office Action fails to provide adequate justification for asserting it.

The claims and disclosure of U.S. Pat. Appl. No. 10/596,418 discloses none of the patentable features of the Applicant's claims pending the in the present application, and the

present application and claims disclose none of the patentable features of the claims in U.S. Pat. Appl. No. 10/596,418.

Specifically, U.S. Pat. Appl. No. 10/596,418 is drawn to an arrangement of a field insulation package that improves safety and eliminates a separate package for use on support structures. The claims of the present application have no limitations to the patentable features that are the subject matter of this cited reference.

Likewise, the present application is drawn to the use of honeycomb core bodies as a replacement or in addition to field insulation packages. The subject matter of U.S. Pat. Appl. No. 10/596,418 does not disclose any of the patentable features of the presently pending claims.

Applicant respectfully requests withdrawal of the provisional obviousness-type double patenting rejection, because there are no conflicting claims, whatsoever.

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Respectfully submitted,



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The American Heritage® Dictionary of the English Language: Fourth Edition. 2000.

## panel

SYLLABICATION: pan·el

PRONUNCIATION: păn'əl

**NOUN:** 1. A flat, usually rectangular piece forming a raised, recessed, or framed part of the surface in which it is set. 2. The space or section in a fence or railing between two posts. 3. A vertical section of fabric; a gore. 4a. A thin wooden board, used as a surface for an oil painting. b. A painting on such a board. 5a. A board having switches or buttons to control an electric device. b. An instrument panel. 6. A section of a telephone switchboard. 7. A cartoon drawing in a sequence of cartoons that form a narrative. 8. *Law* a. The complete list of persons summoned for jury duty. b. Those persons selected from this list to compose a jury. c. A jury. 9a. A group of people gathered to plan or discuss an issue, judge a contest, or act as a team on a radio or television quiz program. b. A discussion by such a group.

**TRANSITIVE VERB:** Inflected forms: pan·eled or pan·elled, pan·el·ing or pan·el·ling, pan·els or pan·els

1. To cover or furnish with panels. 2. To decorate with panels. 3. To separate into panels. 4. *Law* To select or impanel (a jury).

**ETYMOLOGY:** Middle English, piece of cloth, from Old French, probably from Vulgar Latin \*pannellus, diminutive of Latin pannus, cloth. See **pan-** in Appendix I.

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